Specification

Page 4, Paragraph [0033] of the application publication:

At step 166, focused adjacent to an edge of one of the droplets on the surface is a laser beam. The laser beam may pass through the droplet, causing the droplet to heat (e.g., through optical absorption of molecules within the droplet or vibration of the water O-H stretch). This heating causes a thermal gradient to form ~~forms~~ across the droplet, which produces a surface tension across the droplet surface that induces the droplet to move. Alternatively, the laser beam does not pass through the droplet, but passes near the droplet such that the thermal gradient produced in the surrounding liquid phase is sufficient to induce the droplet to move. As the droplet moves, maintaining focus of the laser beam adjacent to the rear (i.e., receding) edge of the droplet steers (step 170) the droplet in a desired direction. For example, the droplet can be moved into a given mixing well of the microfluidic device (to fuse with a droplet already in the well or with a droplet to be moved subsequently into the well). Each well needs not be an actual physical well. The restraining force of contact angle hysteresis may define the location of a well, once the laser is no longer moving the droplet. Microfluidics devices of the invention have a plurality of such mixing wells (e.g., arranged in a two-dimensional array) to enable personnel to perform parallel assays. Researchers can thus draw droplets of sample and reagent fluids from any one of the respective wells, deposit these droplets onto the microfluidics device surface, and move the droplets, as described above, into any given mixing well in accordance with any preferred configuration. Processing of droplets may be performed in an automated fashion, for example with computer control, to avoid direct human interaction when processing very large numbers of droplets.